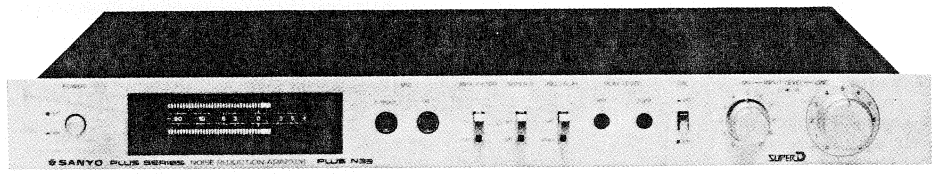
# SERVICE MANUAL

# NOISE REDUCTION

SANYO

## PLUS N33

(EUROPE)



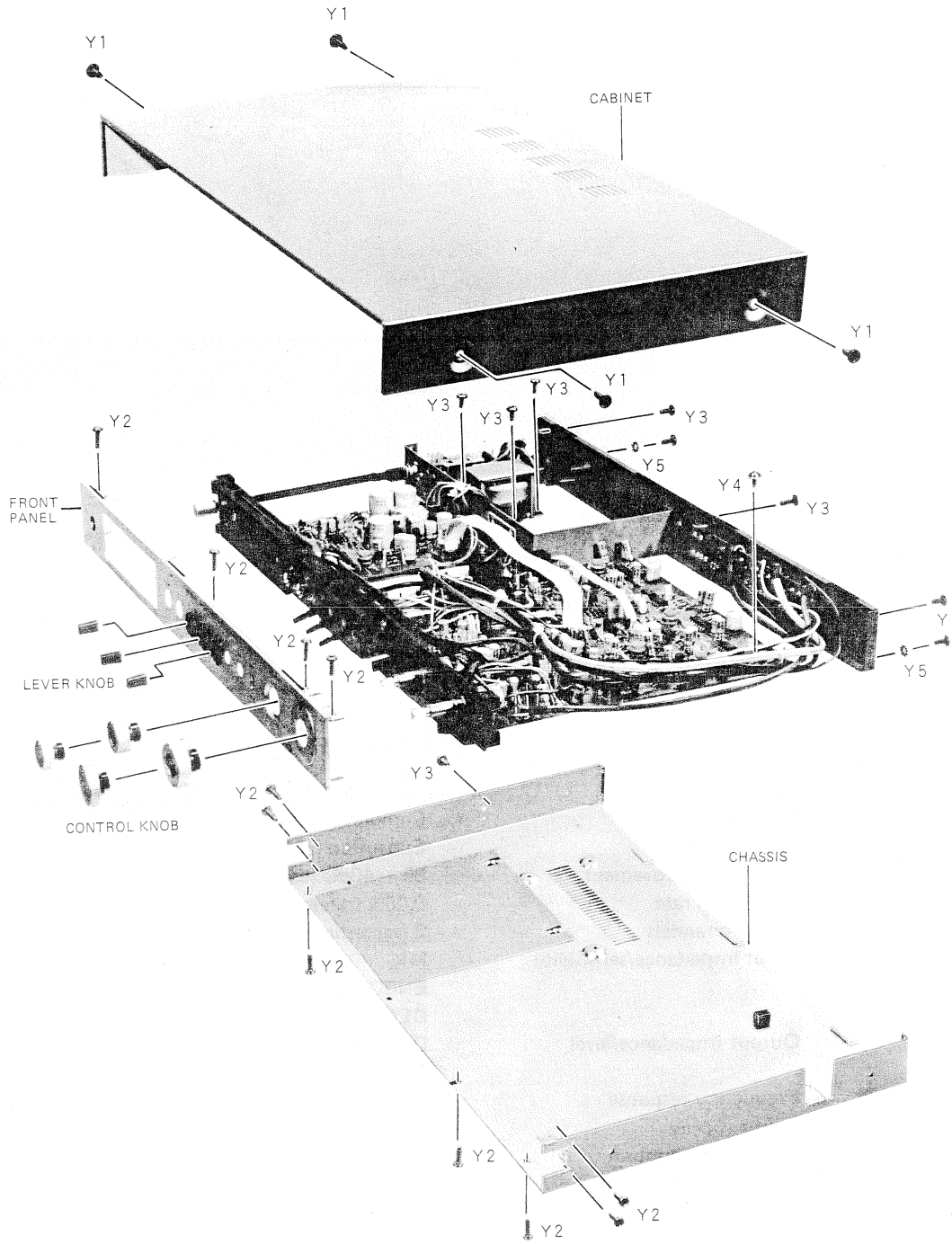
### SPECIFICATIONS

| | |
|---|---|
| Systems | Level compansion & complementary band division |
| Compansion rates | Compression rate: 1/2 |
| | Expansion rate: 2/1 |
| SN ratio improvement | 35 ~ 40dB (concerning tape decks with SN ration of 50dB or more) |
| Distortion rate | 0.08% (reference input level: 1kHz) |
| No. of channels | 2 (recording and playback channels) |
| Input impedance/sensitivity | MIC: 400 ohms – 10 kohms/0.3mV |
| | ENCODE IN: 50KΩ/85mV |
| | DECODE IN: 50KΩ/100mV |
| Output impedance/level | DECODE OUT: 2KΩ or lower/0.53V (at 50KΩ load) |
| | ENCODE OUT: 2KΩ or lower/80mV (at 50KΩ load) |
| Frequency response | 10Hz ~ 30kHz (during encoding & decoding processes) |
| Power supply | AC 115/220V, 50Hz |
| Power consumption | 9W |
| Outside dimensions | 17-3/8"(W) x 10-11/16"(D) x 1-3/4"(H) |
| | (440 x 270 x 44 mm) |
| Weight | 7 lbs (3.1 kg) |

* The specifications and design change without notice.

## HOW TO DISASSEMBLE THE SET

1. REMOVING THE CABINET
   Remove four screws Y1 (binding head tapping screw 4 x 10 mm) from both sides of the set, and lift the both sides up straightly. Then, the cabinet will be separated off.
2. REMOVING THE FRONT PANEL
   Take out operation knobs (MIC input level adjusting knob, line input level adjusting knob, and lever knob), and remove seven upper and lower screws Y2 (binding head tapping screw 3 x 10 mm) from the front panel. Then, the front panel can be detached.
3. REMOVING THE CHASSIS (BACK LID)
   Remove four screws Y3 (binding head tapping screw 3 x 6 mm) and two washers Y5 (soft washer 3 mm) from both ends of back lid (23).
   Then, remove two screws Y3 (binding head tapping screw 3 x 6 mm) securing power transformer (51) and another two screws Y3 (binding head tapping screw 3 x 6 mm) securing bracket (25). Further, remove a screw Y4 (pan head tapping screw WH 3 x 6 mm) fastening the amplifier PCB and chassis, and a screw Y3 (binding head tapping screw 3 x 6 mm) fastening back lid (23) and bracket (25). Then, the chassis can be dismounted.




## CIRCUIT DESCRIPTION OF SUPER D

Figure one is the block diagram of this unit. The playback input terminal is connected to the playback output terminal of the deck, the record output terminal to the record input terminal of the deck, the input terminal to the record output terminal of the preamplifier, and the output terminal to the tape playback terminal of the preamplifier.

When the tape monitor switch of the preamplifier is set to the tape side, the source signal and MIC signal can be directly monitored through speaker by turning of the SUPER D switch and setting the REC/PLAY switch to REC side. The meter indicates the input level of the ENCODER, and its input level can be adjusted by RECORD LEVEL knob. The meter is a peak meter of 10 msec. attach time and 1.5 sec. recovery time.

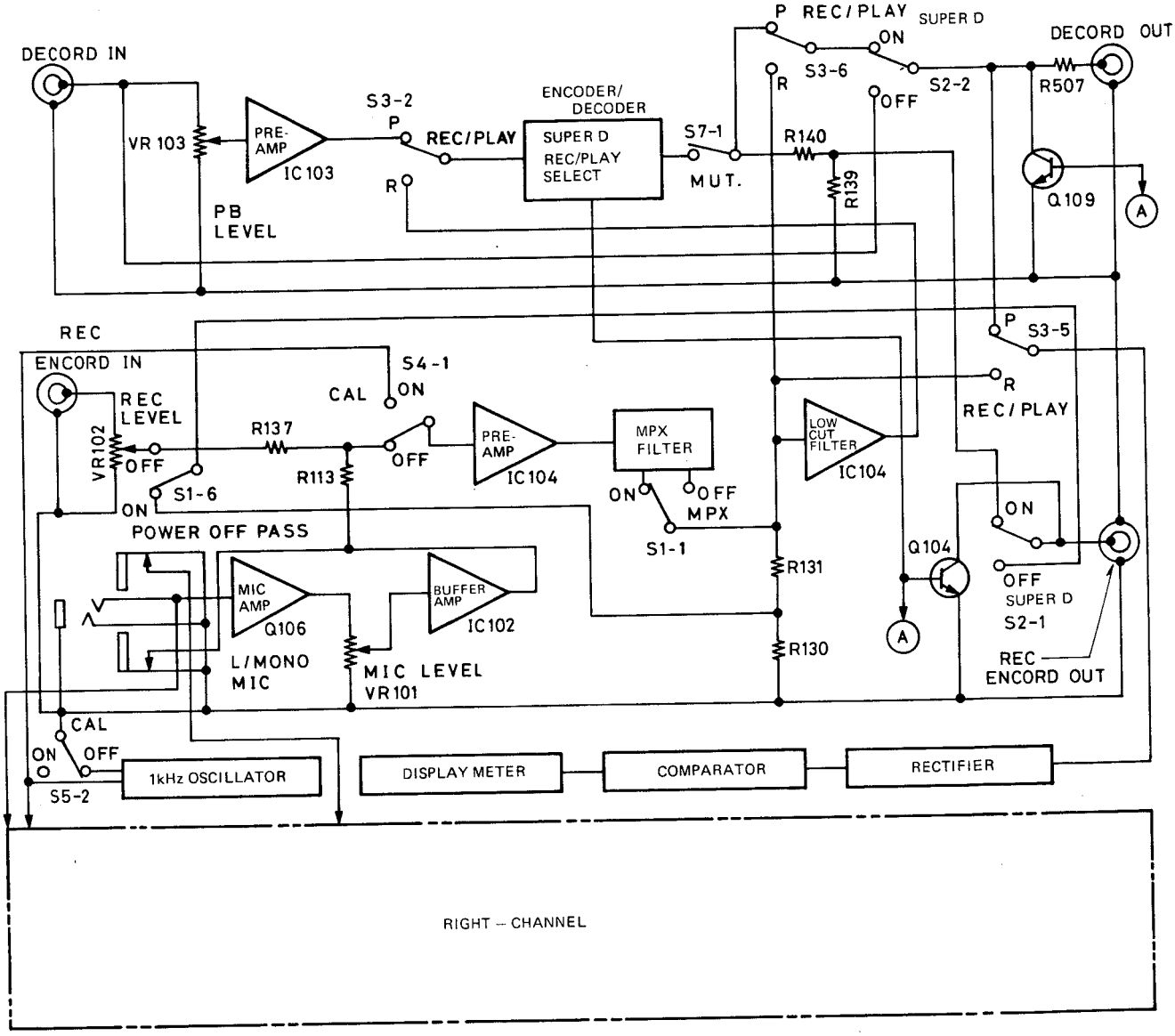
When the REC/PLAY switch is set to PLAY side, the output of the deck can be monitored. At this time, the meter shows the output signal of the DECODER circuit. When the SUPER D switch is turned off, the record signal passes only through the RECORD LEVEL and the playback signal is directly delivered, so that the recording level of the deck can be set by the RECORD LEVEL knob. Besides, since this circuit does not include amplifier, it can be similarly whether the power switch is turned on or off. The flat preamplifier is designed to amplify the input signal to the level to permit the DECODER circuit and ENCODER circuit to function at the optimum S/N ratio point.

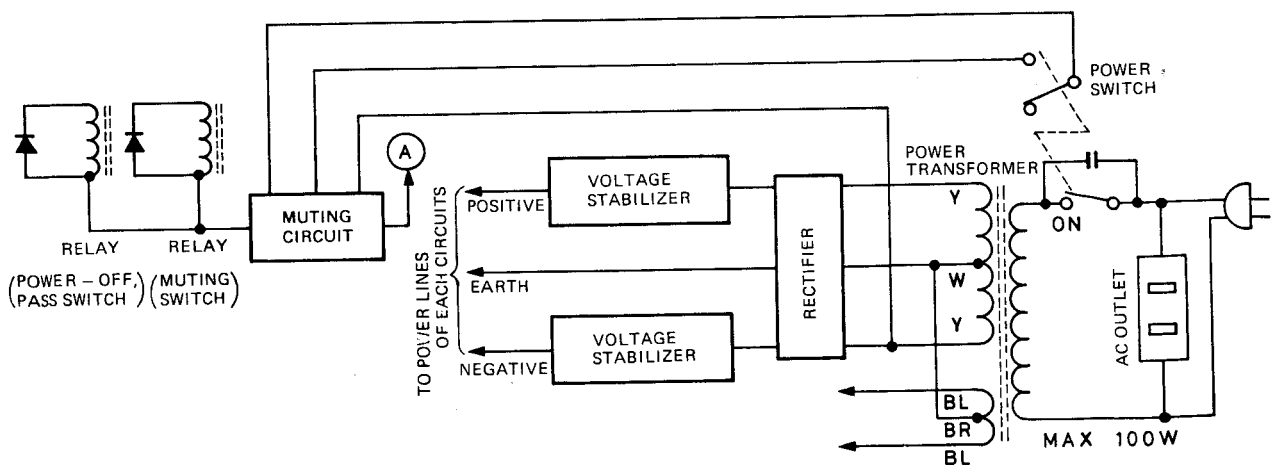
The MPX filter in the ENCODER circuit is designed to remove pilot signal in order to prevent malfunction of the ENCOFER circuit due to pilot signal when recording FM broadcast. The low filter circuit prevents malfunction of ENCODER circuit due to ultralow sound caused by "warp" of disc when recording from disc record.

The 1kHz generator is intended to facilitate input and output level setting of SUPER D and the deck. Once set, it is not necessary to set again if tapes are changed.

NOTE: Refer to the service manual of PLUS N55 for general information about SUPER D.

## BLOCK DIAGRAM



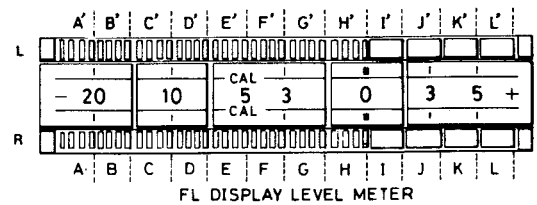



When adjusting, set the switches and knobs in the following positions.

SUPER D switch → ON
REC/PLAY switch → PLAY
MPX filter switch → OFF
CAL switch → OFF
MIC input level adjusting knob → 0 (MIN)
Line input level adjusting knob → 0 (MIN)
Play level control knob → MAX

Pick up the input signal from audio frequency oscillator, and feed into PB (playback input) terminal of the TAPE (deck). As the output, connect VTVM and oscilloscope to the LINE OUT (output) terminal.
Set the input signal level to 100 mV (1 kHz), and take the output at this time as 0 dB.
The part numbers for SVR refer to those of the left channel, and those for the right channel are shown in parentheses.

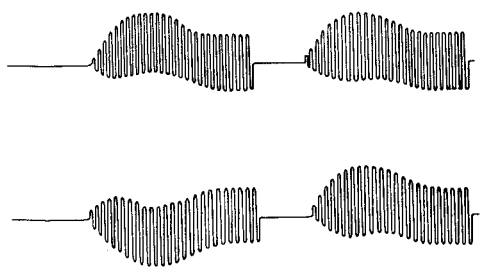
1. **Tracking adjustment (1 kHz)**
   Set the input signal to 3 mV (1 kHz). Turn SVR102 (SVR202) to find the level transforming point of the output value. Set to the position just before this level transforming point.
2. **Tracking adjustment (10 kHz)**
   Set the input signal to 3 mV (10 kHz). Adjust SVR103 (SVR203) in the similar manner as in item 1.
3. **Output adjustment**
   Set the input signal to 30 mV (1 kHz), and record the output value at this time. Change the input signal to 30 mV (10 kHz), and turn SVR101 (SVR201) until the output value at this time becomes +5.5 ± 0.5 dB as compared with that of 1 kHz signal.
4. **DC bias adjustment**
   Cut input signal to set in no-input state. Turn SVR106 (SVR206) until the DC voltage between jumper [C]-L ([C]-R and wrapper pin REC-IN (E) becomes 0.025 V.
5. **DC shift adjustment (1 kHz)**
   Set the input signal to 30 mV (1 kHz) by means of tone burst oscillator (e.g. TRIO MODEL 5201), and adjust SVR104 (SVR204) to obtain the waveform as shown below.
6. **DC shift adjustment (10 kHz)**
   In the same manner as above, set the input signal to 30 mV (10 kHz), and adjust SVR105 (SVR205) to obtain the waveform as shown below.
7. **Meter adjustment (0 dB)**
   Set the input signal to 560 mV (1 kHz). Make sure the display tube is lit up to 0 dB position (segment H,H' in Fig. 3) when the output value is 530 mv ± 0.5 dB. If not lighting as specified, adjust by means of SVR3 (SVR4).
   * If the output value does not become 530 mV ±0.5 dB, adjust the input signal level.
8. **Meter adjustment (–20 dB)**
   Change the input signal to –18 dB from the setting in item 7 (lowering 18 dB from 560 mV). Make sure the display tube is lit up to –20 dB position (segment A,A' in Fig. 3) at this time. Next, change the input signal to 63 mV (1 kHz), and make sure the display tube is extinguished. If these requirements are not satisfied, adjust by means of SVR1 (SVR2).
   * When adjusting items 7 and 8, repeat in the procedure of → 7, → 8, → 7, → 8, → 7.



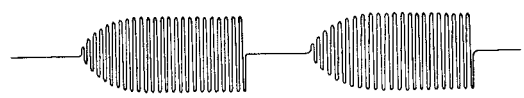
FL DISPLAY LEVEL METER

9. **Output adjustment**
   Set the input signal to 100 mv (1 kHz). Make sure the output value is found within 0.5 dB in both right and left channels. If not successful, short-circuit the jumpers [A] and [B] or cut the jumper [B] in the direction to cause the output value to approach 530 mV, and adjust. (See parts layout drawing.)
   [A], [B] short-circuited
   → Output value lowered 0.7 dB
   [B] cut
   → Output value increased 0.7 dB
10. **MPX filter adjustment**
    When adjusting, set as follows:
    REC/PLAY switch → REC
    Input level adjusting knob → 10 (MAX)
    Play level control knob → MIN
    Connect the input signal to the IN (input) terminal of the LINE (phono).
    Set the input signal to 85 mV (1 kHz), and take the output value at this time as 0 dB. Next, feed 85 mV (19 kHz ± 100 Hz), and adjust L101 (L201) until the output value becomes more than –30 dB.

**BEFORE ADJUSTMENT**



**AFTER ADJUSTMENT**



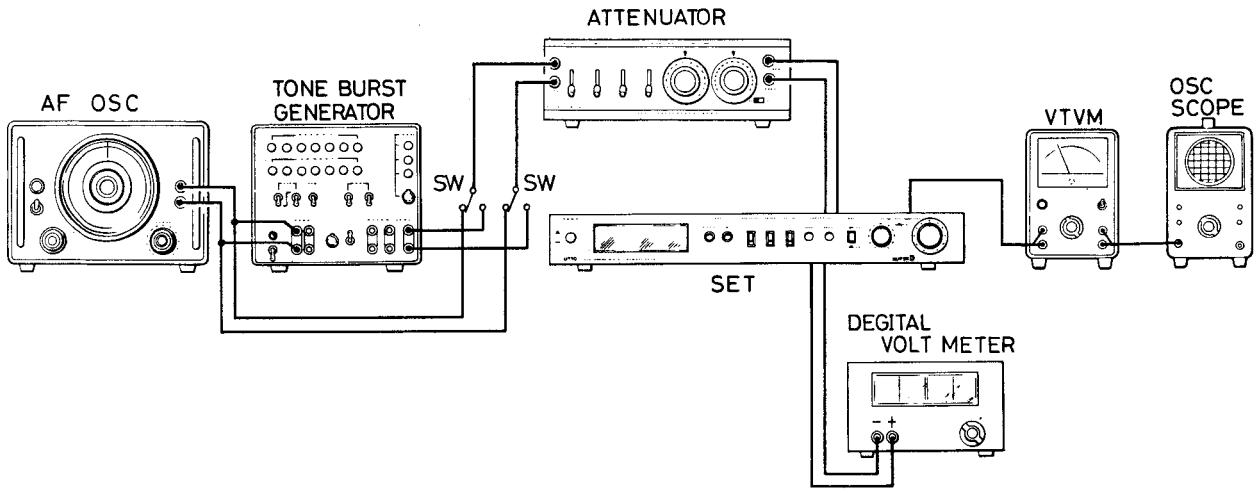
Make these parts as linearly as possible, and set the waveform parts symmetrical vertically.

**WAVEFORM CHART**

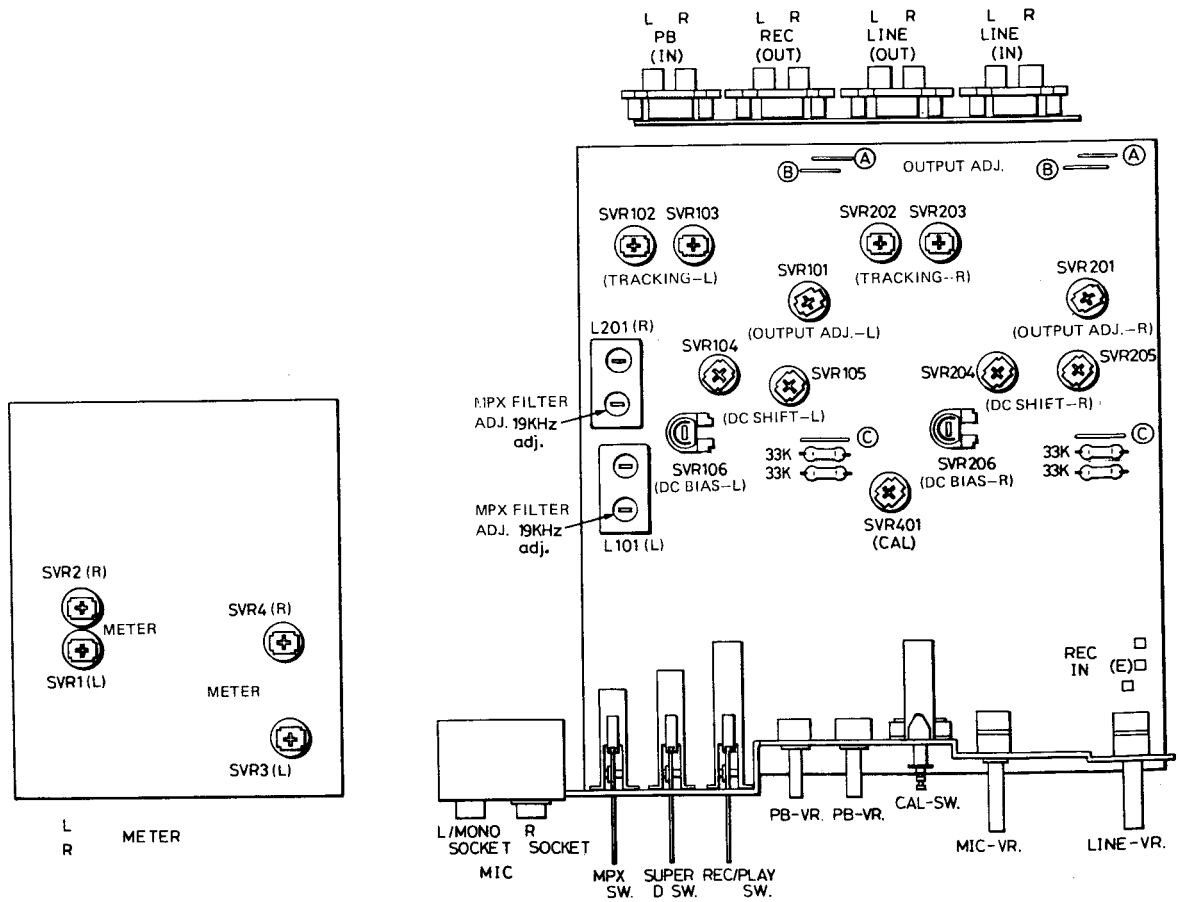
**11. CAL adjustment**

In addition to the preparatory conditions in item 10, set the CAL switch to ON position, and cut input signal to set in no-input state.

First find the output level to light up the display tube to −5 dB (segment 6 in Fig. 3) on both right and left channel. Then, increase by 0.7 dB by means of SVR401. Next, turning on and off the MPX filter switch, make sure the CAL lighting level does not change.




## PARTS LOCATIONS



## PARTS LIST

| Key No. | Part No. | Description | Q'ty |
|---|---|---|---|
| **PACKING** | | | |
| | 141-6-133T-15500 | Individual Carton (Silver) | 1 |
| | 141-6-133T-15501 | Individual Carton (Black) | 1 |
| | 141-6-144T-57900 | Foam Plastic Case | 2 |
| | 141-6-231T-40550 | Inner Polye Cover, Set | 1 |
| | 141-6-231T-20300 | Inner Polye Cover, Inst M | 1 |
| | 141-6-231T-10300 | Inner Polye Cover, AC Cord | 1 |
| **ACCESSORY** | | | |
| | 141-2-862T-00500 | Driver Tuning | 1 |
| | 141-6-410T-49000 | Instruction Manual | 1 |
| | 4-243T-13302 | Cord Ass'y | 1 |
| | 4-241T-13971 | Cassette Tape C-8 | 1 |
| **CABINET** | | | |
| 1 | 141-0-122T-33801 | Front Panel Ass'y (Silver) | 1 |
| | 141-0-122T-33831 | Front Panel Ass'y (Black) | 1 |
| 2 | 141-0-163T-59600 | Rotary Knob Ass'y (Silver) | 1 |
| | 141-0-163T-59630 | Rotary Knob Ass'y (Black) | 1 |
| 3 | 141-0-163T-59700 | Rotary Knob Ass'y (Silver) | 1 |
| | 141-0-163T-59730 | Rotary Knob Ass'y (Black) | 1 |
| 4 | 141-0-163T-59800 | Rotary Knob Ass'y (Silver) | 1 |
| | 141-0-163T-59830 | Rotary Knob Ass'y (Black) | 1 |
| 5 | 141-0-163T-59900 | Rotary Knob Ass'y (Silver) | 1 |
| | 141-0-163T-59930 | Rotary Knob Ass'y (Black) | 1 |
| 6 | 141-2-111T-43300 | Cabinet (Silver) | 1 |
| | 141-2-111T-43330 | Cabinet (Black) | 1 |
| 7 | 141-2-162T-16001 | Lever Knob (Silver) | 3 |
| | 141-2-162T-16030 | Lever Knob (Black) | 3 |
| 8 | 141-2-174T-05100 | Stand | 4 |
| 9 | 141-2-441T-05000 | Felt Cushion | 4 |
| **CHASSIS** | | | |
| 21 | 141-0-161T-74900 | Push Button Ass'y (Silver) | 1 |
| | 141-0-161T-74930 | Push Button Ass'y (Black) | 1 |
| 22 | 141-0-161T-75000 | Push Button Ass'y (Silver) | 1 |
| | 141-0-161T-75030 | Push Button Ass'y (Black) | 1 |
| 23 | 141-2-126T-33001 | Back Lid (Silver) | 1 |
| | 141-2-126T-33031 | Back Lid (Black) | 1 |
| 24 | 141-2-311T-34500 | Chassis | 1 |
| 25 | 141-2-310T-36900 | Blacket, Power SW | 1 |
| 26 | 141-2-210T-21400 | Blacket, Front Chassis | 1 |
| 27 | 141-2-365T-51200 | Bracket, Switch | 1 |
| 28 | 141-2-464T-14400 | Fixer, AC Cord | 1 |
| 29 | 141-2-163T-61100 | Rotary Knob | 2 |
| 30 | 141-2-210T-11500 | Bracket, Dedital | 1 |
| 31 | 141-2-132T-14300 | Sign Window | 1 |
| 32 | 141-2-246T-72301 | Sheet | 1 |
| 33 | 141-2-447T-46800 | Cushion 10x20x3t, Blacket | 2 |
| 34 | 141-2-447T-34200 | Cushion 6x10x6t, PCB | 2 |
| 35 | 141-2-447T-28200 | Cushion 12x12x12t, Power SW PCB | 1 |
| 36 | 141-2-447T-62100 | Cushion, Bracket | 1 |
| 37 | 141-2-210T-08900 | Bracket | 1 |
| 38 | 141-2-447T-03000 | Cushion 5x30, Back Lid | 4 |
| 39 | 141-2-447T-45900 | Cushion 20x40x8t, PT | 1 |
| 40 | 141-2-246T-76300 | Sheet, Voltage Select | 1 |
| 41 | 141-2-411T-08100 | Plate Nut, Voltage Select | 1 |
| 42 | 141-2-464T-20671 | Fixer | 4 |
| 43 | 141-2-246T-80500 | Sheet, Chassis | 1 |
| **SCREW & OTHERS** | | | |
| Y1 | | Binding Head Tapping Screw 4x10mm | 4 |
| Y2 | | Binding Head Tapping Screw 3x10mm | 18 |
| Y3 | | Binding Head Tapping Screw 3x6mm | 13 |
| Y4 | | Washer Head Tapping Screw 3x6mm | 9 |
| Y5 | | Eaternal Toothlock Washer 3mm | 2 |

| Key No. | Part No. | Description | Q'ty |
|---|---|---|---|
| **SCREW & OTHERS** | | | |
| Y6 | | Pan Head Screw 3x6mm | 2 |
| Y7 | | Binding Head Tapping Screw 3x8mm | 5 |
| Y8 | | Flat Head Screw 3x6mm | 5 |
| Y9 | | Washer Head Tapping Screw 3x14mm | 1 |
| Y10 | | Tapping Screw 3x6mm | 1 |
| Y11 | | Binding Head Screw 3x10mm | 2 |
| **ELECTRICAL PARTS** | | | |
| 51 | 4-300T-04671 | Power Trans | 1 |
| 52 | 4-243T-77172 | Power Cord | 1 |
| 53 | 4-231T-53677 | Switch, Voltage Select | 1 |
| **METER & POWER SUPPLY PCB ASS'Y** | | | |
| 55 | 141-4-233T-41301 | P.C Board Ass'y, Meter & Power Supply | 1 |
| | 4-985T-01100 | Fluorescent Display | 1 |
| SVR1,2 | 4-222T-62081 | Semifixed Variable Resistor 4.7K | 2 |
| SVR3,4 | 4-222T-62089 | Semifixed Variable Resistor 100K | 2 |
| | 4-235T-69471 | Socket 6P | 1 |
| | 141-2-368T-18700 | Heat Sink | 1 |
| | 141-2-381T-04200 | Bracket, Fuse | 4 |
| | 4-234T-04001 | Fuse 200mA | 2 |
| | 141-6-476T-13400 | Indication Label, Fuse | 1 |
| IC1,2 | | IC BA658 | 2 |
| IC3,4 | | IC NJM4558D DIP08 | 2 |
| Q304,306 305,308 311,314 316 | | Transistor 2SC536 AUD | 7 |
| Q307 | | Transistor 2SB632 | 1 |
| Q309 | | Transistor 2SD330 | 1 |
| D1~10 301 | | Diode 1S2473 | 11 |
| D305,306 307,308 302 | | Diode 1N4003 | 5 |
| D303 | | Zener Diode WZ162 | 1 |
| D304 | | Zener Diode RD5.6EB3 | 1 |
| | **CAPACITORS** | | |
| C312,313 | | Electrolytic 1000μF 35V | 2 |
| C322,323 | | Electrolytic 220μF 25V | 2 |
| C315,314 | | Electrolytic 220μF 25V | 2 |
| C316,324 | | Electrolytic 220μF 25V | 2 |
| C311 | | Electrolytic 100μF 25V | 1 |
| C304 | | Electrolytic 470μF 6.3V | 1 |
| C8,9 | | Electrolytic 10μF 25V | 2 |
| C303 | | Electrolytic 1μF 25V | 1 |
| C321 | | Electrolytic 470μF 25V | 1 |
| C7 | | Electrolytic 220μF 25V | 1 |
| C2,5 | | Electrolytic 4.7μF 25V | 2 |
| C1,4,31 36 | | Electrolytic 1μF 50V Nonpolar | 4 |
| C317 | | Ceramic 0.01μF 500V +80–20% | 1 |
| C2,6 | | Tantal 2.2μF 16V ±20% | 2 |
| | **RESISTORS** | | |
| R4,14 | | Carbon 10K ohm ±2% ¼W | 2 |
| R1,11 | | Carbon 20K ohm ±2% ¼W | 2 |
| R2,12 | | Carbon 20K ohm ±2% ¼W | 2 |
| R3,13 | | Carbon 20K ohm ±2% ¼W | 2 |
| R24 | | Solid 82 ohm ±10% ½W | 1 |
| R32,62 | | Carbon 1M ohm ±5% ¼W | 2 |
| R34,64 | | Carbon 100K ohm ±5% ¼W | 2 |
| R25,26 | | Carbon 6.8K ohm ±5% ¼W | 2 |
| R5,15 | | Carbon 10K ohm ±5% ¼W | 2 |

## PARTS LIST

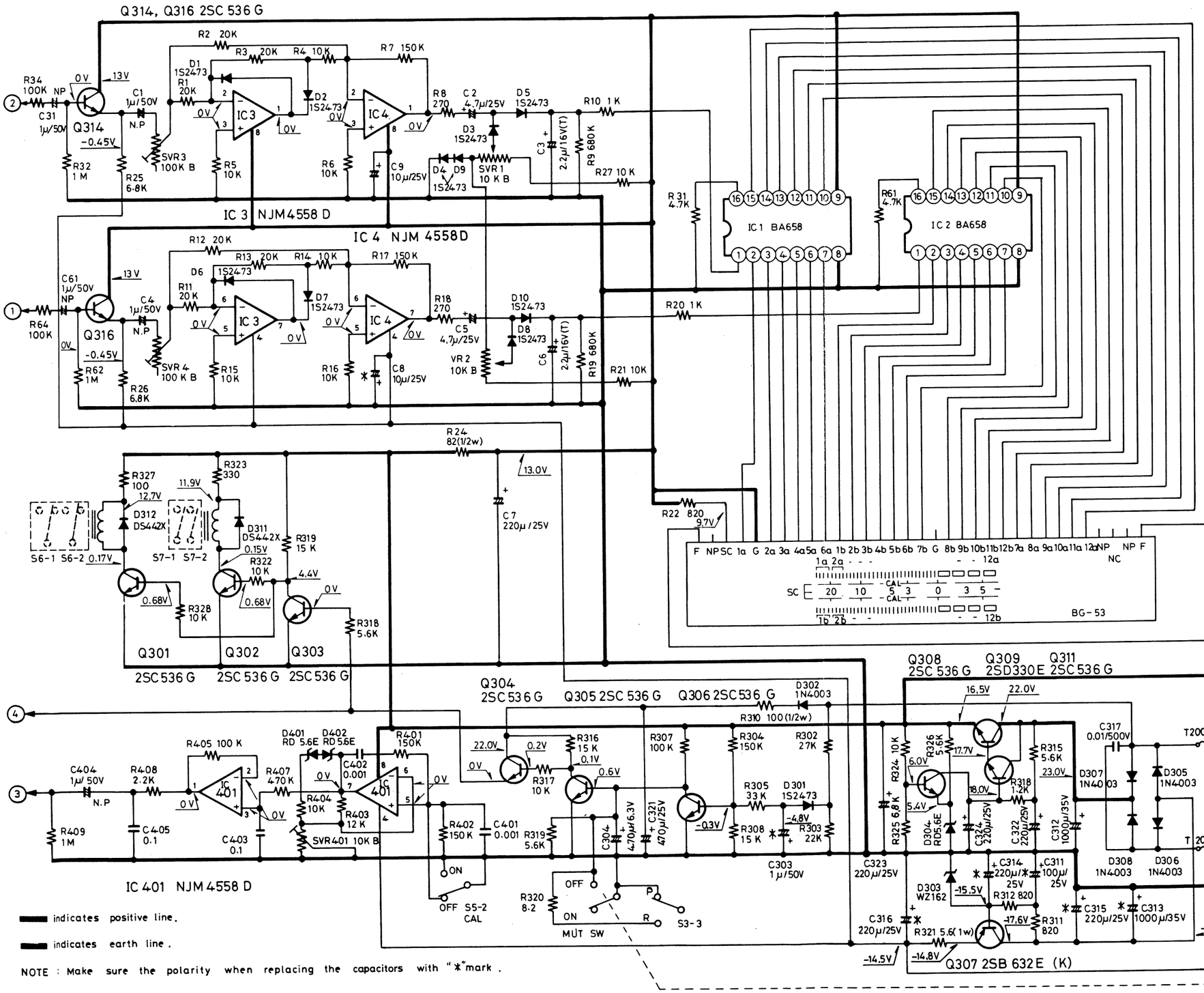
| Key No. | Part No. | Description | Q'ty |
|---|---|---|---|
| **METER & POWER SUPPLY PCB ASS'Y** | | | |
| | **RESISTORS** | | |
| R6,16 | | Carbon 10K ohm ±5% ¼W | 2 |
| R7,17 | | Carbon 150K ohm ±5% ¼W | 2 |
| R8,18 | | Carbon 270 ohm ±5% ¼W | 2 |
| R10,20 | | Carbon 1K ohm ±5% ¼W | 2 |
| R31,61 | | Carbon 4.7K ohm ±5% ¼W | 2 |
| R9,19 | | Carbon 680K ohm ±5% ¼W | 2 |
| R21,27 | | Carbon 10K ohm ±5% ¼W | 2 |
| R22 | | Carbon 820 ohm ±5% ¼W | 1 |
| R321 | | Metal 5.6 ohm ±5% 1W | 1 |
| R310 | | Metal 100 ohm ±5% ½W | 1 |
| R325 | | Carbon 6.8K ohm ±5% ¼W | 1 |
| R326 | | Carbon 5.6K ohm ±5% ¼W | 1 |
| R315 | | Carbon 5.6K ohm ±5% ¼W | 1 |
| R324 | | Carbon 10K ohm ±5% ¼W | 1 |
| R318 | | Carbon 1.2K ohm ±5% ¼W | 1 |
| R303 | | Carbon 22K ohm ±5% ¼W | 1 |
| R302 | | Carbon 27K ohm ±5% ¼W | 1 |
| R304 | | Carbon 150K ohm ±5% ¼W | 1 |
| R308 | | Carbon 15K ohm ±5% ¼W | 1 |
| R305 | | Carbon 33K ohm ±5% ¼W | 1 |
| R319 | | Carbon 5.6K ohm ±5% ¼W | 1 |
| R307 | | Carbon 100K ohm ±5% ¼W | 1 |
| R311 | | Carbon 820 ohm ±5% ¼W | 1 |
| R312 | | Carbon 820 ohm ±5% ¼W | 1 |
| R316 | | Carbon 15K ohm ±5% ¼W | 1 |
| R317 | | Carbon 10K ohm ±5% ¼W | 1 |
| **AMP PCB ASS'Y** | | | |
| 56 | 141-4-233T-41400 | P.C. Board Ass'y, AMP | 1 |
| L101,201 | 4-255T-01600 | MX Coil | 2 |
| S1 | 4-231T-78700 | Special Switch, MPX | 1 |
| S2 | 4-231T-82300 | Switch, Super D | 1 |
| S3 | 4-231T-87971 | Switch, R/P | 1 |
| S4 | 4-231T-80771 | Switch, Cal | 1 |
| VR103 203 | 4-222T-74290 | Variable Resistor 50K | 2 |
| VR101A 101B 102A 102B | 4-222T-78000 | Variable Resistor 50K | 2 |
| SVR101 201,102 202,103 203,104 204,105 205,106 206,401 | 4-222T-62083 | Semifixed Variable Resistor 10K | 13 |
| | 4-232T-04500 | Relay, Muting | 1 |
| | 4-232T-05900 | Relay, Power Off | 1 |
| | 141-2-464T-20671 | Fixer | 4 |
| | 141-2-464T-08700 | Fixer | 1 |
| IC102 103,104 204,105 205,106 206,401 | | IC NJM4558DD DIP08 | 9 |
| IC107 207 | | IC LM324N | 2 |
| IC108 208 | | IC μA747CN | 2 |
| IC111 211 | | IC LM301AP | 2 |
| | | IC NE570N | 2 |
| Q101,201 102,202 107,207 108,208 301,302 303,305 | | Transistor 2SC536 | 12 |
| Q106,206 | | Transistor 2SC1571 | 2 |
| D101,201 102,202 103,203 104,204 105,205 106,206 311,312 | | Diode DS442X | 14 |

| Key No. | Part No. | Description | Q'ty |
|---|---|---|---|
| **AMP PCB ASS'Y** | | | |
| D107,207 401,402 | | Zenes Diode RD5.6E B3 | 4 |
| D108,208 109,209 | | Diode 02BZ4.7 | 4 |
| | **CAPACITORS** | | |
| C147,247 | | Ceramic 100pF 50V ±5% | 2 |
| C149,249 | | Ceramic 0.001μF 50V ±10% | 2 |
| C151,251 | | Ceramic 47pF 50V ±5% | 2 |
| C152,252 | | Ceramic 10pF 50V ±0.5pF | 2 |
| C153,253 | | Ceramic 0.001μF 50V ±10% | 2 |
| C118,218 | | Ceramic 470pF 50V ±10% | 2 |
| C117,217 | | Ceramic 100pF 50V ±5% | 2 |
| C111,211 | | Ceramic 10pF 50V ±10% | 2 |
| C116,216 | | Ceramic 33pF 50V ±10% | 2 |
| C103,203 | | Ceramic 0.001μF 50V ±10% | 2 |
| C107,207 | | Ceramic 100pF 50V ±5% | 2 |
| C905 | | Ceramic 0.01μF 50V +80—20% | 1 |
| C131,231 | | Ceramic 270pF 50V ±5% | 2 |
| C134,234 | | Mylar 0.001μF 50V ±5% | 2 |
| C136,236 | | Mylar 0.001μF 50V ±5% | 2 |
| C132,232 | | Mylar 0.001μF 50V ±5% | 2 |
| C133,233 155,255 | | Mylar 0.0022μF 50V ±5% | 4 |
| C129,229 139,239 403,405 | | Mylar 0.1μF 50V ±5% | 6 |
| C119,219 | | Mylar 0.15μF 50V ±5% | 2 |
| C121,221 | | Mylar 0.15μF 50V ±5% | 2 |
| C401,402 | | Mylar 0.001μF 50V ±5% | 2 |
| C122,222 123,223 | | Mylar 0.001μF 50V ±5% | 4 |
| C142,242 159,259 161,261 | | Electrolytic 10μF 25V | 6 |
| C141,241 156,256 | | Electrolytic 1μF 50V | 4 |
| C144,244 | | Electrolytic 3.3μF 25V | 2 |
| C143,243 | | Electrolytic 3.3μF 25V | 2 |
| | | Electrolytic 47μF 25V | 2 |
| C127,227 128,228 158,258 331,332 333,334 336,327 | | Electrolytic 100μF 25V | 12 |
| C157,257 | | Electrolytic 22μF 25V | 2 |
| C102,202 154,254 | | Electrolytic Nonpolar 4.7μF 25V | 4 |
| C106,206 138,238 | | Electrolytic Nonpolar 2.2μF 50V | 4 |
| C101,201 | | Electrolytic Nonpolar 1μF 50V | 2 |
| C105,205 | | Electrolytic Nonpolar 1μF 50V | 2 |
| C901,902 | | Electrolytic 220μF 25V | 2 |
| C108,208 126,226 137,237 124,224 | | Electrolytic Nonpolar 1μF 50V | 8 |
| C112,212 113,213 202,162 | | Electrolytic Nonpolar 4.7μF 25V | 6 |
| C114,214 | | Electrolytic Nonpolar 4.7μF 25V | 2 |
| C404 | | Electrolytic Nonpolar 1μF 50V | 1 |
| | **RESISTORS** | | |
| R142,242 143,243 327 | | FP-Carbon 100 ±5% ¼W | 5 |
| R144,244 | | Carbon 6.8K ohm ±5% ¼W | 2 |
| R153,253 | | Carbon 6.8K ohm ±5% ¼W | 2 |
| R147,247 | | Carbon 330 ohm ±5% ¼W | 2 |
| R148,248 199,299 | | Carbon 33K ohm ±5% ¼W | 4 |

| Key No. | Part No. | Description | Q'ty |
|---|---|---|---|
| **AMP PCB ASS'Y** | | | |
| | **RESISTORS** | | |
| R151,251 323 | | Carbon 330 ohm ±5% ¼W | 3 |
| R149,249 | | Carbon 3.3M ohm ±5% ¼W | 2 |
| R146,246 | | Carbon 6.8K ohm ±5% ¼W | 2 |
| R152,252 | | Carbon 33K ohm ±5% ¼W | 2 |
| R154,254 | | Carbon 3.9K ohm ±5% ¼W | 2 |
| R156,256 | | Carbon 15K ohm ±5% ¼W | 2 |
| R157,257 | | Carbon 15K ohm ±5% ¼W | 2 |
| R158,258 159,259 502,602 | | Carbon 68K ohm ±5% ¼W | 6 |
| R190,290 | | Carbon 1K ohm ±5% ¼W | 2 |
| R196,296 | | Carbon 2.7K ohm ±5% ¼W | 2 |
| R197,297 504,604 506,606 | | Carbon 10K ohm ±5% ¼W | 6 |
| R198,298 | | Carbon 68K ohm ±5% ¼W | 2 |
| R501,601 | | Carbon 33K ohm ±5% ¼W | 2 |
| R183,283 | | Carbon 1K ohm ±5% ¼W | 2 |
| R184,284 | | Carbon 1K ohm ±5% ¼W | 2 |
| R181,281 | | Carbon 1K ohm ±5% ¼W | 2 |
| R182,282 | | Carbon 1K ohm ±5% ¼W | 2 |
| R186,286 | | Carbon 56 ohm ±5% ¼W | 2 |
| R193,293 | | Carbon 2.2K ohm ±5% ¼W | 2 |
| R187,287 | | Carbon 56 ohm ±5% ¼W | 2 |
| R194,294 | | Carbon 2.2K ohm ±5% ¼W | 2 |
| R192,292 | | Carbon 220 ohm ±5% ¼W | 2 |
| R188,288 | | Carbon 2.2K ohm ±5% ¼W | 2 |
| R191,291 | | Carbon 220 ohm ±5% ¼W | 2 |
| R189,289 | | Carbon 2.2K ohm ±5% ¼W | 2 |
| R169,269 | | Carbon 33K ohm ±5% ¼W | 2 |
| R171,271 | | Carbon 100K ohm ±5% ¼W | 2 |
| R176,276 | | Carbon 68K ohm ±5% ¼W | 2 |
| R177,277 | | Carbon 680K ohm ±5% ¼W | 2 |
| R178,278 | | Carbon 680K ohm ±5% ¼W | 2 |
| R168,268 | | Carbon 47K ohm ±5% ¼W | 2 |
| R174,274 | | Carbon 100K ohm ±5% ¼W | 2 |
| R173,273 | | Carbon 330 ohm ±5% ¼W | 2 |
| R172,272 | | Carbon 33K ohm ±5% ¼W | 2 |
| R167,267 | | Carbon 100K ohm ±5% ¼W | 2 |
| R166,266 | | Carbon 33K ohm ±5% ¼W | 2 |
| R164,264 | | Carbon 33K ohm ±5% ¼W | 2 |
| R163,263 | | Carbon 33K ohm ±5% ¼W | 2 |
| R161,261 | | Carbon 8.2K ohm ±2% ¼W | 2 |
| R162,262 | | Carbon 82K ohm ±2% ¼W | 2 |
| R179,279 | | Carbon 10K ohm ±5% ¼W | 2 |
| R128,228 | | Carbon 2.7K ohm ±5% ¼W | 2 |
| R129,229 | | Carbon 2.7K ohm ±5% ¼W | 2 |
| R139 | | Carbon 1.5K ohm ±5% ¼W | 1 |
| R320 | | Carbon 8.2 ohm ±5% ¼W | 1 |
| R239 | | Carbon 1.5K ohm ±5% ¼W | 1 |
| R140 | | Carbon 8.2K ohm ±5% ¼W | 1 |
| R121 | | Carbon 1M ohm ±5% ¼W | 1 |
| R221 | | Carbon 1M ohm ±5% ¼W | 1 |
| R119,219 | | Carbon 56K ohm ±5% ¼W | 2 |
| R118,218 | | Carbon 15K ohm ±5% ¼W | 2 |
| R117,217 | | Carbon 330 ohm ±5% ¼W | 2 |
| R116,216 | | Carbon 100K ohm ±5% ¼W | 2 |
| R403 | | Carbon 12K ohm ±5% ¼W | 1 |
| R404 | | Carbon 10K ohm ±5% ¼W | 1 |
| R407 | | Carbon 470K ohm ±5% ¼W | 1 |
| R405 | | Carbon 100K ohm ±5% ¼W | 1 |
| R401,402 | | Carbon 150K ohm ±5% ¼W | 2 |
| R408 | | Carbon 2.2K ohm ±5% ¼W | 1 |
| R409 | | Carbon 1M ohm ±5% ¼W | 1 |
| R133,233 511,611 512,612 | | Carbon 100K ohm ±5% ¼W | 6 |
| R134,234 | | Carbon 330 ohm ±5% ¼W | 2 |
| R136,236 | | Carbon 120K ohm ±5% ¼W | 2 |
| R132,232 | | Carbon 39K ohm ±5% ¼W | 2 |
| R123,223 | | Carbon 100K ohm ±5% ¼W | 2 |
| R124,224 | | Carbon 330 ohm ±5% ¼W | 2 |
| R126,226 | | Carbon 2.2K ohm ±5% ¼W | 2 |
| R127,227 | | Carbon 56K ohm ±5% ¼W | 2 |
| R122,222 | | Carbon 1M ohm ±5% ¼W | 2 |
| R318 | | Carbon 5.6K ohm ±5% ¼W | 1 |
| R319 | | Carbon 15K ohm ±5% ¼W | 1 |
| R322 | | Carbon 10K ohm ±5% ¼W | 1 |
| R328 | | Carbon 10K ohm ±5% ¼W | 1 |

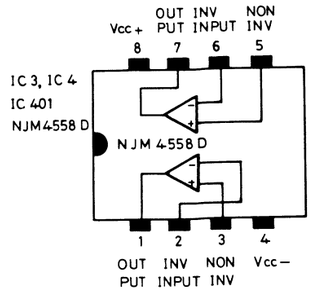
| Key No. | Part No. | Description | Q'ty |
|---|---|---|---|
| **AMP PCB ASS'Y** | | | |
| | **RESISTORS** | | |
| R102,202 | | Carbon 4.7K ohm ±5% ¼W | 2 |
| R106,206 | | Carbon 68 ohm ±5% ¼W | 2 |
| R103,203 | | Carbon 390K ohm ±5% ¼W | 2 |
| R108,208 | | Carbon 100K ohm ±5% ¼W | 2 |
| R107,207 | | Carbon 330 ohm ±5% ¼W | 2 |
| R109,209 | | Carbon 5.6K ohm ±5% ¼W | 2 |
| R137,237 | | Carbon 56K ohm ±5% ¼W | 2 |
| R112,212 | | Carbon 1K ohm ±5% ¼W | 2 |
| R113,213 | | Carbon 47K ohm ±5% ¼W | 2 |
| R901 | | Carbon 680 ohm ±5% ¼W | 1 |
| R902 | | Carbon 1K ohm ±5% ¼W | 1 |
| R111,211 | | Carbon 22K ohm ±5% ¼W | 2 |
| R101,201 | | Carbon 100 ohm ±5% ¼W | 2 |
| R105,205 | | Carbon 4.7K ohm ±5% ¼W | 2 |
| R240 | | Carbon 8.2K ohm ±5% ¼W | 1 |
| R131,231 | | Carbon 4.7K ohm ±5% ¼W | 2 |
| R130,230 | | Carbon 820 ohm ±5% ¼W | 2 |
| R135,235 | | Carbon 120 ohm ±5% ¼W | 2 |
| R503,603 | | Carbon 22K ohm ±2% ¼W | 2 |
| **SOCKET PCB ASS'Y** | | | |
| 57 | 141-4-233T-41501 | P.C Board Ass'y, Socket | 1 |
| Q109,209 | | Transistor 2SD1012 | 2 |
| Q104,204 | | Transistor 2SD536 | 2 |
| D317,315 316 | | Diode DS442X | 3 |
| R507,607 | | Carbon Res. 5.6K ohm ±5% ¼W | 2 |
| R141,241 | | Carbon Res. 1K ohm ±5% ¼W | 2 |
| R508,608 | | Carbon 5.6K ohm ±5% ¼W | 2 |
| C906 | | Ceramic Cap. 0.01μF 50V +80—20% | 1 |
| | 4-235T-68500 | Socket (2p) | 4 |
| **MIC PCB ASS'Y** | | | |
| 58 | 141-4-233T-41600 | P.C Board Ass'y, Mic | 1 |
| | 4-235T-45200 | Socket | 2 |
| **POWER SWITCH PCB ASS'Y** | | | |
| 59 | 141-4-233T-21911 | P.C Board Ass'y, Power Switch | 1 |
| | 4-238T-07973 | Push Switch, Power | 1 |
| | 4-223T-11700 | Capacitor 0.01μF 250V | 1 |

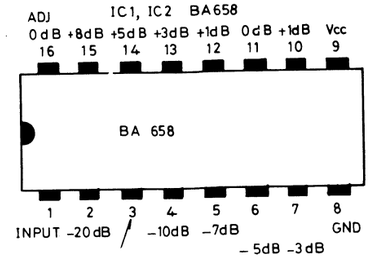
## SCHEMATIC DIAGRAM (METER/POWER SUPPLY)

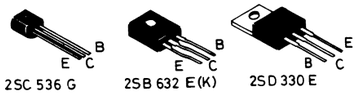



NOTE : Make sure the polarity when replacing the capacitors with "*"mark .

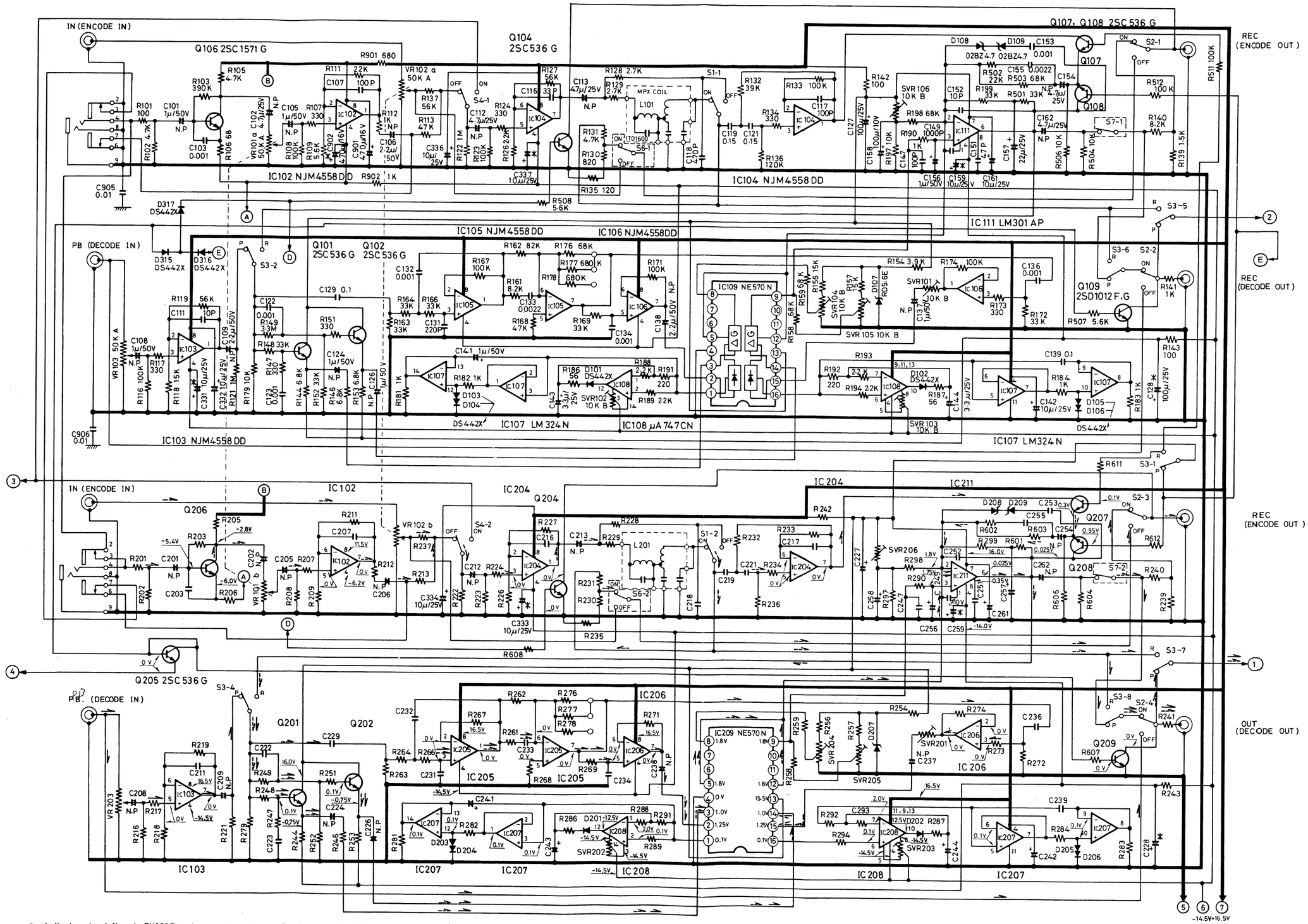
NOTE: Refer to the service manual of PLUS N55 for the block diagrams of other IC.

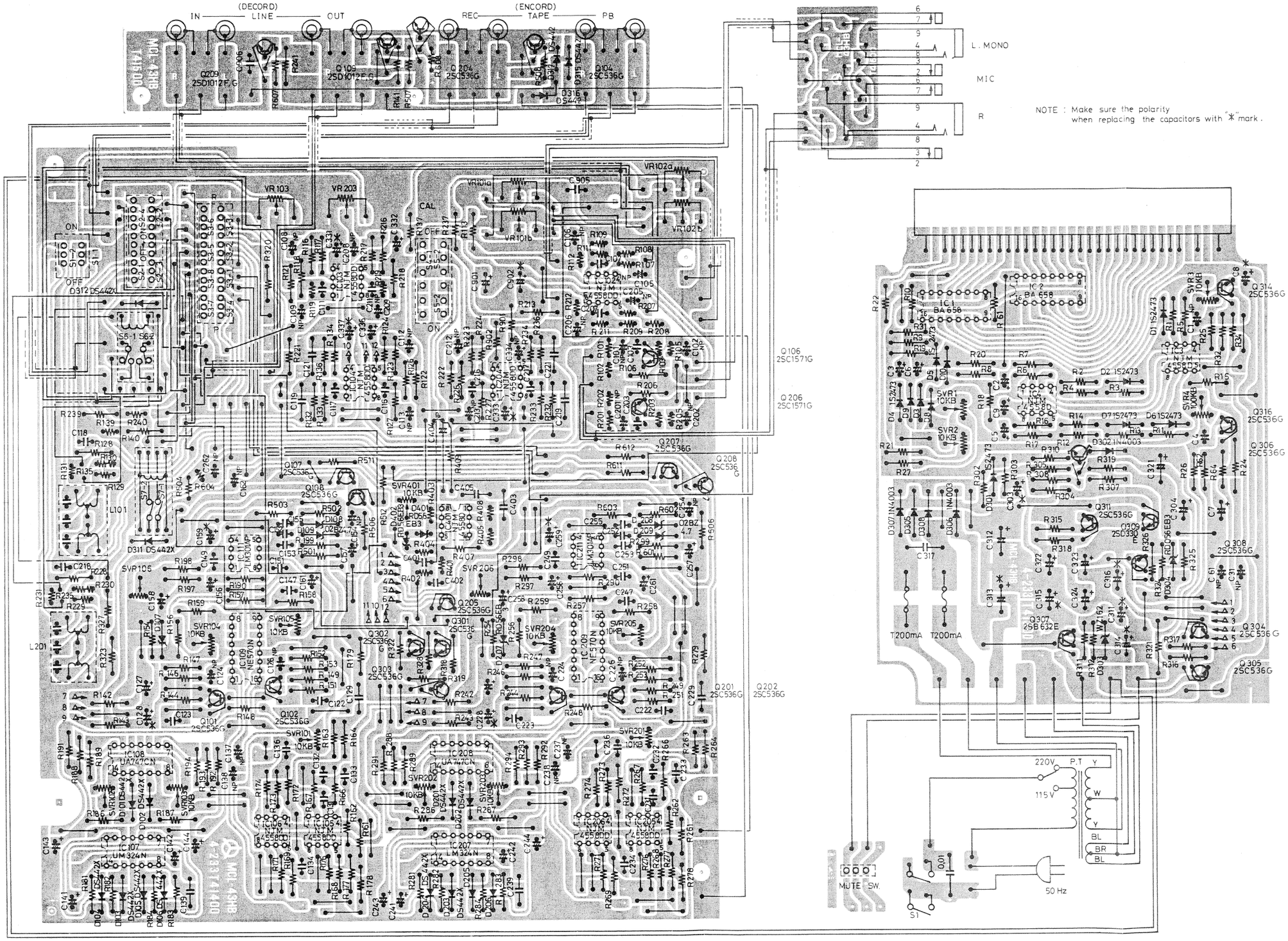


## SCEMATIC DIAGRAM (MAIN)




(DECORD)
IN
LINE
OUT
(ENCORD)
REC
TAPE
PB
L. MONO
MIC
R
NOTE : Make sure the polarity
when replacing the capacitors with "*" mark.
MUTE SW.
220V
115V
P.T
50 Hz
T200mA
T200mA

# MODIFICATION NOTICE

NOISE REDUCTION SYSTEM

SANYO

PLUS N33 (EUROPE)

Date Oct. 15, 1980 Issued by _____

Add this sheet to Service Manual for Model PLUS N33.

CABINET & CHASSIS EXPLODED VIEW.